South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

May 8, 2009

Mr. Gerardo Rios (R9AirPermits_SC@EPA)
U.S. EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105

SUBJECT: Proposed De Minimis Significant Title V Revision for Southern California Edison, Pebbly Beach Generating Station, ID# 4477

Dear Mr. Rios:

The South Coast Air Quality Management District (AQMD) has received and reviewed a permit application from Southern California Edison (SCE), Pebbly Beach Generating Station. This application involves Unit #15 changes, including adding a 1 hour averaging time associated with the BACT limit, an exemption from the limit for start ups and shutdowns, an annual limit on PM emissions, and testing requirements, as part of a settlement agreement negotiated by AQMD and SCE.

The AQMD is required under Rule 3005 (e) to provide a copy of the proposed permit to the EPA Administrator for a 45-day review. As such, a copy of the proposed revision to the existing Title V permit is attached along with our engineering analysis for your review. We intend to issue the final permit at the end of EPA's 45-day review period, pending any comments we receive.

If you have any questions or wish to provide comments regarding this project, please contact Mr. Chris Perri at (909) 396-2696 / cperri@aqmd.gov or Mr. John Yee (909) 396-2531 / jyee@aqmd.gov.

Very truly yours,

Michael D. Mills

Michael D. Mills, P.E
Senior Manager
General Commercial & Energy Team
Engineering & Compliance

Enclosure

Cc: Uve Sillat, SCE

FACILITY PERMIT TO OPERATE

SO CAL EDISON CO
1 PEBBLY BEACH RD
AVALON, CA 90704

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Barry R. Wallerstein, D. Env.
EXECUTIVE OFFICER

By _____
Mohsen Nazemi, P.E.
Deputy Executive Officer
Engineering & Compliance

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
System 1 : POWER GENERATION					
INTERNAL COMBUSTION ENGINE, UNIT NO. 7, DIESEL FUEL, EMD, MODEL 16-567-C, WITH TURBOCHARGER, 1500 HP WITH A/N: 404268 Permit to Construct Issued: 08/05/03 GENERATOR, 1000 KW	D1	C54 C76	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]* ; **NOX:** 7.5 lbs/net MWH DIESEL (5) *[RULE 2009.1,5-11-2001]* ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 300 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]*	A195.8, D29.1, D29.2, D90.1, D425.1, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #7, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 7 FT 7 IN WITH A/N: 402942 Permit to Construct Issued: 08/05/03 UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #7 TANK, DAY TANK #7, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT	C54	D1		**NH3:** 10 PPMV (5) **[RULE 1303(a)(1)-BACT,5-10-1996]**	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1
CO OXIDATION CATALYST A/N: 402942 Permit to Construct Issued: 08/05/03	C76	D1			

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

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The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
INTERNAL COMBUSTION ENGINE, UNIT NO. 8, DIESEL FUEL, EMD, MODEL 16-567-D4, TWO CYCLE, LEAN BURN, WITH TURBOCHARGER, 2150 HP WITH A/N: 405149 Permit to Construct Issued: 08/05/03 GENERATOR, 1500 KW	D2	C59 C77	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]* ; **NOX:** 7.5 lbs/net MWH DIESEL (5) *[RULE 2009.1,5-11-2001]* ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 300 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]*	A195.8, D29.1, D29.2, D90.1, D425.1, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #8, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 7 FT 7 IN WITH A/N: 405151 Permit to Construct Issued: 08/05/03 UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #8 TANK, DAY TANK #8, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT	C59	D2		**NH3:** 10 PPMV (5) **[RULE 1303(a)(1)-BACT,5-10-1996]**	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1
CO OXIDATION CATALYST A/N: 405151 Permit to Construct Issued: 08/05/03	C77	D2			

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
INTERNAL COMBUSTION ENGINE, UNIT NO. 10, DIESEL FUEL, EMD, MODEL 16-645-E1, WITH TURBOCHARGER, 1575 HP WITH A/N: 404270 Permit to Construct Issued: 08/05/03 GENERATOR, 1125 KW	D3	C55 C78	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]* ; **NOX:** 7.5 lbs/net MWH DIESEL (5) *[RULE 2009.1,5-11-2001]* ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 305 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]*	A195.8, D29.1, D29.2, D90.1, D425.1, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #10, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 7 FT 7 IN WITH A/N: 403322 Permit to Construct Issued: 08/05/03 TANK, DAY TANK #10, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #10	C55	D3		**NH3:** 10 PPMV (5B) **[RULE 1303(a)(1)-BACT,5-10-1996]**	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1
CO OXIDATION CATALYST A/N: 403322 Permit to Construct Issued: 08/05/03	C78	D3			

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
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SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
INTERNAL COMBUSTION ENGINE, UNIT NO. 12, *DIESEL FUEL*, EMD, MODEL 12-645-E4, WITH TURBOCHARGER, 2200 HP WITH A/N: 404271 Permit to Construct Issued: 08/05/03 GENERATOR, 1500 KW	D5	C56 C79	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) [*RULE 1110.2,2-1-2008*] ; **NOX:** 7.5 lbs/net MWH DIESEL (5) [*RULE 2009.1,5-11-2001*] ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 301 PPMV DIESEL (5) [*RULE 1110.2,2-1-2008*]	A195.8, D29.1, D29.2, D90.1, D425.1, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #12, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 7 FT 7 IN WITH A/N: 402940 Permit to Construct Issued: 08/05/03 UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #12 TANK, DAY TANK #12, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT	C56	D5		**NH3:** 10 PPMV (5) **[RULE 1303(a)(1)-BACT,5-10-1996]**	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1
CO OXIDATION CATALYST A/N: 402940 Permit to Construct Issued: 08/05/03	C79	D5			

* (1)(1A)(1B) Denotes RECLAIM emission factor (2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits (10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
INTERNAL COMBUSTION ENGINE, UNIT NO. 14, DIESEL FUEL, GENERAL MOTORS, MODEL S16-645-E1, 16 CYLINDERS, WITH TURBOCHARGER, 1950 HP WITH A/N: 404272 Permit to Construct Issued: 08/05/03 GENERATOR, 1400 KW	D6	C57 C80	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]* ; **NOX:** 7.5 lbs/net MWH DIESEL (5) *[RULE 2009.1,5-11-2001]* ; **PM:** (9) **[RULE 404,2-7-1986]** **ROG:** 294 PPMV DIESEL (5) *[RULE 1110.2,2-1-2008]*	A195.8, D29.1, D29.2, D90.1, D425.1, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #14, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 7 FT 7 IN WITH A/N: 403321 Permit to Construct Issued: 08/05/03 UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #14 TANK, DAY TANK #14, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT	C57	D6		**NH3:** 10 PPMV (4) **[RULE 1303(a)(1)-BACT,5-10-1996]**	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1
CO OXIDATION CATALYST A/N: 403321 Permit to Construct Issued: 08/05/03	C80	D6			

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
INTERNAL COMBUSTION ENGINE, LEAN BURN, NON-EMERGENCY, UNIT NO. 15, DIESEL FUEL, EMD, MODEL 16-710G4B, TWO CYCLE, WITH AFTERCOOLER, TURBOCHARGER, 3900 HP WITH A/N: 405148 Permit to Construct Issued: 08/05/03 GENERATOR, 2800 KW	D42	C58	NOX: MAJOR SOURCE**	**CO:** 2000 PPMV DIESEL (5) [*RULE 1110.2,2-1-2008*] ; **NOX:** 51 PPMV DIESEL (4) [**RULE 2005,10-15-1993;RULE 2005,4-9-1999**] **NOX:** 2.13 lbs/net MWH DIESEL (5) [*RULE 2009.1,5-11-2001*] ; **PM:** (9) [**RULE 404,2-7-1986**] ; **ROG:** 250 PPMV DIESEL (5) [*RULE 1110.2,2-1-2008*]	A63.1, A63.2, A99.1, A195.7, A195.9, D29.1, D29.2, D29.3, D323.2, D425.1, E51.1, E71.2, E73.1, H23.3, I331.1, K40.2
SELECTIVE CATALYTIC REDUCTION, UNIT #15, JOHNSON MATTHEY, METAL MONOLITH VANADIA/TITANIA, 1000.5 CU.FT.; WIDTH: 4 FT; HEIGHT: 6 FT 6 IN; LENGTH: 8 FT 9 IN WITH A/N: 405147 Permit to Construct Issued: 08/05/03 UREA INJECTION SYSTEM, AQUEOUS UREA INJECTION GRID #15	C58	D42		**NH3:** 10 PPMV (4) [**RULE 1303(a)(1)-BACT,5-10-1996**]	A195.2, D12.3, D12.4, D12.5, E179.1, E179.2, E193.1

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

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The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1 : INTERNAL COMBUSTION					
TANK, DAY TANK #15, AQUEOUS UREA, 150 GALS; LENGTH: 3 FT; WIDTH: 3 FT					
Process 3 : ORGANIC CHEMICAL STORAGE					
STORAGE TANK, FIXED ROOF, NO. 1, 32.5 PERCENT AQUEOUS UREA, 10000 GALS; DIAMETER: 13 FT 6 IN; HEIGHT: 12 FT A/N: 403321 Permit to Construct Issued: 08/05/03	D72				
STORAGE TANK, FIXED ROOF, NO. 2, 32.5 PERCENT AQUEOUS UREA, 10000 GALS; DIAMETER: 13 FT 6 IN; HEIGHT: 12 FT A/N: 403321 Permit to Construct Issued: 08/05/03	D73				

* (1)(1A)(1B) Denotes RECLAIM emission factor
(2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits
(10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: DEVICE ID INDEX

The following sub-section provides an index to the devices that make up the facility description sorted by device ID.

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: DEVICE ID INDEX

Device Index For Section H			
Device ID	**Section H Page No.**	**Process**	**System**
D1	1	1	1
D2	2	1	1
D3	3	1	1
D5	4	1	1
D6	5	1	1
D42	6	1	1
C54	1	1	1
C55	3	1	1
C56	4	1	1
C57	5	1	1
C58	6	1	1
C59	2	1	1
D72	7	3	0
D73	7	3	0
C76	1	1	1
C77	2	1	1
C78	3	1	1
C79	4	1	1
C80	5	1	1

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

FACILITY CONDITIONS

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[RULE 401, 3-2-1984; RULE 401, 9-11-1998]

F14.1 The operator shall not use fuel oil containing sulfur compounds in excess of 0.05 percent by weight.

[RULE 431.2, 5-4-1990; RULE 431.2, 9-15-2000]

F14.2 The operator shall not purchase fuel oil containing sulfur compounds in excess of 15 ppm by weight as supplied by the supplier.

This condition shall become effective on or after June 1, 2004.

[RULE 431.2, 9-15-2000]

DEVICE CONDITIONS

A. Emission Limits

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

A63.1 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
ROG	Less than or equal to 11.2 LBS PER DAY
SOX	Less than or equal to 32.9 LBS PER DAY
PM10	Less than or equal to 44.4 LBS PER DAY
CO	Less than or equal to 206.1 LBS PER DAY

The limits for ROG, CO, and PM10 shall be verified using the latest source test results for each pollutant in lbs/hr multiplied by actual number of hours the unit has operated each day

[RULE 1303(b)(2)-Offset, 5-10-1996]

[Devices subject to this condition : D42]

A63.2 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
PM	Less than or equal to 5.32 TONS IN ANY ONE YEAR

The limit shall be verified by using the results from the latest source test for PM emissions and either the total annual fuel use or the total annual hours of operation for the unit. The yearly emission limit shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month

[RULE 1401, 3-7-2008]

[Devices subject to this condition : D42]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

A99.1 The 51 PPM NOX emission limit(s) shall not apply during start up or shutdown periods. Each start up shall not exceed 60 minutes and each shutdown shall not exceed 15 minutes. There shall be no more than 720 start ups per year. NOx emissions for the 60 minutes which includes a start up shall not exceed 25 lbs.

[RULE 2005, 5-6-2005]

[Devices subject to this condition : D42]

A195.2 The 10 PPMV NH3 emission limit(s) is averaged over 60 minutes at 15 percent O2 dry. The operator shall calculate and continuously record the NH3 slip concentration using the following equations.

NH3(ppmv)=[a-b*c/1E6]*1E6/b, a=NH3 (urea) injection rate (lb/hr)/17(lb/lb-mole), b=dry exhaust gas flow rate(lb/hr)/29(lb/lb-mole), and c=change in measured NOx across the SCR, ppmv at 15 percent O2).

The operator shall install and maintain a NOx analyzer, or other method as approved by the AQMD to measure the SCR inlet NOx ppm accurate to within +/- 5 percent calibrated at least once every 12 months.

The operator shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information determination without corroborative data using an approved reference test method for the determination of ammonia.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

A195.7 The 2.13 LBS/MW-HR NOX emission limit(s) is averaged over 1 year.

(b) For each quarter starting from the fourth quarter of compliance year 2001, report the quarterly NOx emissions and the energy produced in megawatts-hour for the quarter from this device. The report shall be filed along with the Quarterly Certificate of Emission Report (QCER) as required by Rule 2004.

1. To demonstrate compliance with the Nox emission rate for Device D42, the facility permit holder shall comply with the following:.

(a) Determine the NOx emissions from the device pursuant to Rule 2012 including any required data substitution.

2. The SCR control equipment shall be capable of achieving a NOx reduction of at least 70%.

[**RULE 2004, 5-11-2001**; RULE 2009.1, 5-11-2001]

[Devices subject to this condition : D42]

A195.8 The 7.5 LBS/MW-HR NOX emission limit(s) is averaged over 1 calendar year. The limit is calculated based on the total mass NOx emitted from Units 7, 8, 10, 12, 14, and 15 combined.

1. To demonstrate compliance with the Nox emission rate, the facility permit holder shall comply with the following:

a) Determine the mass NOx emissions from the all engines pursuant to Rule 2012 including any required data substitution

b) For each quarter, report the quarterly NOx emissions and the energy produced in megawatts-hour for the quarter from all engines. The report shall be filed along with the Quarterly Certificate of Emission Report (QCER) as required by Rule 2004

[**RULE 2004, 5-11-2001**; RULE 2004, 4-6-2007; RULE 2009.1, 5-11-2001]

[Devices subject to this condition : D1, D2, D3, D5, D6]

FACILITY PERMIT TO OPERATE
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SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

A195.9 The 51 PPM NOX emission limit(s) is averaged over 60 minutes at 15 percent O2, dry.

If the 51 ppm NOx limit is exceeded, Unit 15 shall be subject to a 40 ppm NOx limit averaged over any 3 hour block period which includes the one hour period during which the 51 ppm limit is exceeded, at 15 percent O2, dry, for no more than 5 times per calendar year.

The One-Hour Average NOx Limit is based on four consecutive valid 15 minute averaging periods. At least 1 minute of valid data is required for each 15 minute period.

The Three-Hour Average NOx Limit is based on twelve consecutive valid 15-minute averaging periods. At least 1 minute of valid data is required for each 15 minute period. If the daily calibration check occurs during any of the twelve periods (periods 1-12), that period may be excluded and a 13th 15-minute period may be added (period 0 or 13).

All other valid 15 minute average periods, including periods with data substitution, shall be used to calculate the averages.

Notwithstanding the clock-hour requirements of Rule 2012, or the definition of One Hour Average in this condition, the NOx emissions from the unit shall comply with the BACT limit for the 60 minute period beginning after the end of each start up, and for the 60 minute period beginning 15 minutes before the end of each shutdown. The operator shall also show compliance with the BACT limit for the overlapping clock-hour average in these situations.

The operator shall keep minute data for at least 60 minutes after the end of a start up and at least 60 minutes prior to the start of a shutdown, and use the average of the data to show compliance with the BACT limit. Any data substitution during these 60 minute periods shall be used in the calculation of the average.

[RULE 2005, 5-6-2005]

[Devices subject to this condition : D42]

D. Monitoring/Testing Requirements

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D12.3 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the engine exaust at the inlet to the SCR reactor.

The operator shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

D12.4 The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the flow rate of the urea injection system.

The operator shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

D12.5 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the the SCR catalyst bed in inches water column.

The operator shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D29.1 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NOX emissions	District method 100.1	1 hour	Outlet of the SCR serving this equipment
CO emissions	District method 100.1	1 hour	Outlet of the SCR serving this equipment
SOX emissions	District method 6.1	1 hour	Outlet of the SCR serving this equipment
ROG emissions	Approved District method	1 hour	Outlet of the SCR serving this equipment
PM emissions	Approved District method	District-approved averaging time	Outlet of the SCR serving this equipment
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment

The District shall be notified of the date and time of the test at least 10 days prior to the test

The test(s) shall be conducted after approval of the test protocol, but no later than 180 days after initial start-up of the internal combustion engine(s) with SCR

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the test shall measure the fuel flow rate (CFH), the flue gas flow rate, and the generator output (MW)

The test shall be conducted when the equipment is operating at loads of 100, 75, and 50 percent of maximum load

The test shall be conducted in accordance with a AQMD approved source test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the ICE(s) during the test, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of R304, and a description of all sampling and analytical procedures.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 2005, 4-9-1999; RULE 2005, 4-20-2001]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR serving this equipment

The test shall be conducted at least quarterly during the first 12 months of operation of the SCR, and at least annually thereafter.

The test shall be conducted to determine the NH3 emissions at the outlet using the specified method measured over a 60 minute averaging time period. The NOx concentration , as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District method 100.1.

The test shall be conducted when the equipment is operating at 80 percent load or greater.

The test shall be conducted and the results submitted to the District within 45 days after the test date.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
ROG emissions	Approved District method	1 hour	Outlet of the SCR serving this equipment
PM emissions	Approved District method	1 hour	Outlet of the SCR serving this equipment
CO emissions	District method 100.1	1 hour	Outlet of the SCR serving this equipment

The test shall be conducted at least once every year for PM and ROG, and at least once every 2 years for CO, or in accordance with Rule 1110.2, whichever is more stringent

The test shall be conducted to determine compliance with the A63.1 limits. Test results in lbs/hr or lbs/1000 gallons shall be used in conjunction with either the hours of operation or the fuel use data to calculate the daily and annual emissions of these pollutants

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, and the engine generating output in MW. The test shall be conducted when the unit is operating at 80% of full load or greater (less than full load test results will be prorated to full load).

The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ROG and CO test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period

The test shall be conducted in accordance with AQMD approved protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the lab certifying that it meets the criteria of R304, and a description of all sampling and analytical procedures

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D42]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D90.1 The operator shall monitor the power output of the engine generator according to the following specifications:

The operator shall install and maintain a device to accurately indicate the net power output of the engine generator. The data will be used to calculated the emissions in lbs/MWh

The measuring device or gauge shall be accurate within plus or minus 5 percent. It shall be calibrated once every 12 months.

The operator shall also install and maintain a device to continuously record the parameter being monitored.

[RULE 2004, 5-11-2001; RULE 2004, 4-6-2007; RULE 2009.1, 5-11-2001]

[Devices subject to this condition : D1, D2, D3, D5, D6]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

D323.2 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on a quarterly basis, at least, unless the equipment did not operate during the entire quarterly period. The routine quarterly inspection shall be conducted while the equipment is in operation and during daylight hours.

If any visible emissions (not including condensed water vapor) are detected that last more than three minutes in any one hour, the operator shall verify and certify within 24 hours that the equipment causing the emission and any associated air pollution control equipment are operating normally according to their design and standard procedures and under the same conditions under which compliance was achieved in the past, and either:

1). Take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit; or

2). Have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures in the CARB manual "Visible Emission Evaluation", within three business days and report any deviations to AQMD.

The operator shall keep the records in accordance with the recordkeeping requirements in Section K of this permit and the following records:

1). Stack or emission point identification;

2). Description of any corrective actions taken to abate visible emissions;

3). Date and time visible emission was abated; and

4). All visible emission observation records by operator or a certified smoke reader.

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition : D42]

D425.1 The operator shall have the existing NOx CEMS monitoring this device reevaluated by the District by submitting a CEMS application. If the CEMS is not recertified within 90 days of the start-up of this device, the facility permit holder shall calculate and report NOx emissions in accordance with Rule 2012, Appendix A, Chapter 2, Paragraph (B)(17)-Recertification Requirements.

[RULE 2012, 3-16-2001; **RULE 2012, 12-5-2003**]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

E. Equipment Operation/Construction Requirements

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

E51.1 The following condition number(s) shall not apply if all of the requirements stated below are met:

Condition number 63-1

Requirement number 1: startup, not to exceed 1 hour

[RULE 1303(b)(2)-Offset, 5-10-1996]

[Devices subject to this condition : D42]

E71.2 The operator shall not operate this equipment if engine #11 is not shutdown, and the Permit to Operate surrendered to the District..

[RULE 1303(b)(2)-Offset, 5-10-1996]

[Devices subject to this condition : D42]

E73.1 Notwithstanding the requirements of Section E conditions, the operator may, at his discretion, choose not to use urea injection during start ups when the exhaust temperature at the inlet of the SCR reactor is less than 550 Deg F, not to exceed 1 hour:

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 402, 5-7-1976]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

E179.1 For the purpose of the following condition number(s), continuously record shall be defined as recording at least once every hour and shall be calculated upon the average of the continuous monitoring for that hour.

Condition Number D 12- 3

Condition Number D 12- 4

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

E179.2 For the purpose of the following condition number(s), continuously record shall be defined as recording at least once every month and shall be calculated based upon the average of the continuous monitoring for that month.

Condition Number D 12- 5

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

E193.1 The operator shall construct, operate, and maintain this equipment according to the following specifications:

In accordance with all mitigation measures, as well as all design and operational representations, stipulated in the CEQA document that was prepared for this project by the South Coast AQMD (SCH No. 2003031050)

[CA PRC CEQA, 11-23-1970]

[Devices subject to this condition : C54, C55, C56, C57, C58, C59]

H. Applicable Rules

H23.3 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
PM	District Rule	1470

These engines operating with SCR, are exempt from the PM standards of this rule

[RULE 1470, 6-1-2007]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

I. Administrative

FACILITY PERMIT TO OPERATE
SO CAL EDISON CO

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

I331.1 The conditions and requirements for this device in Section H shall take effect, and shall supersede those in Section D, when the modifications authorized in Section H are completed. The operator shall notify the AQMD when the modifications are completed.

[RULE 202, 5-7-1976]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

K. Record Keeping/Reporting

K40.2 The operator shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

Emission data shall be expressed in terms of mass rate (lbs/hr). In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include engine fuel , exhaust gas rate, and engine and generator output under which the test was conducted.

In addition, NOx emission data shall be expressed in terms of lbs/MW-hr

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 percent oxygen, dry basis.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 2005, 4-9-1999; RULE 2005, 4-20-2001]

[Devices subject to this condition : D1, D2, D3, D5, D6, D42]

PERMIT TO CONSTRUCT EVALUATION

APPLICANT:

Southern California Edison
2244 Walnut Grove Ave
Rosemead, CA 91770

EQUIPMENT LOCATION:

1 Pebbly Beach Road
Avalon, CA 90704

EQUIPMENT DESCRIPTION:

Section H of the SCE, Pebbly Beach Facility Permit, ID #4477 (proposed changes are shown in **underline** or ~~strikethrough~~)

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions and Requirements	Conditions
Process 1: Internal Combustion					
System 1: Power Generation					
INTERNAL COMBUSTION ENGINE, LEAN BURN, NON-EMERGENCY, UNIT NO. 15, DIESEL FUEL, EMD, MODEL 16-710G4B, TWO CYCLE, WITH AFTERCOOLER, TURBOCHARGER, 3900 HP, WITH A/N: ~~405148~~ **483417** GENERATOR, 2800 KW	D42	C58	NOX: MAJOR SOURCE	CO: 2000 PPMV DIESEL (5) [RULE 1110.2]; NOx: 51 PPM DIESEL (4) [RULE 2005]; PM: (9) [RULE 404]; ROG: 250 PPMV DIESEL (5) [RULE 1110.2] NOx: 2.13 LBS/MW-HR (5) [RULE 2009.1]; **NOx: 7.5 LBS/MW HR (5) [RULE 2009.1]**	A63.1, **A99.1**, A195.7, **A195.8**, D29.1, D29.2, D323.2, D425.1, E51.1, E71.2, E73.1, H23.1, I133.1, K40.2

BACKGROUND:

The diesel engines at Pebbly Beach provide power to the residents and businesses on Catalina Island. The facility is located approximately 1.8 miles southeast of the city of Avalon. There are a total of 6 engines on the island. Unit #15 is the newest engine, installed in the mid 1990's.

SCE applied for a change of condition for Unit #15 in December, 2004 under A/N 438818. In their application, they asked for a start up and shutdown exemption from the NOx BACT limit of 51 ppm, and they also requested that they be allowed to remove the oxidation catalyst to make

room for another layer of SCR catalyst. The application was denied in July, 2006 because SCE did not perform the necessary analysis to show that their requested changes would not violate any permit conditions or rules. AQMD and SCE have had multiple meetings since the denial to discuss SCE's options. SCE has now re-applied for the same changes under this application.

SCE has received NOV's for exceeding the 51 ppm NOx limit on Unit 15. SCE has indicated that the engine has trouble meeting the limit during rapid load changes. The NOVs are summarized in the following table:

NOV	Violation Date	Violation
P45263	1/26/06	Unit #15 exceeded its 51ppm NOx limit
P45266	3/24/06	Unit #15 exceeded its 51ppm NOx limit
P47267	4/11/06	Unit #15 exceeded its 51ppm NOx limit

AQMD and SCE are currently in negotiations for a Settlement Agreement to address this issue (along with issues associated with their other engines, refer to the Settlement Agreement language along with A/N's 483412-16). SCE has proposed the following changes to their permit to allow them to operate Unit 15 in compliance at all times:

1. Allow a 1 hour averaging time for the 51 ppm NOx limit, with a provision for exceeding the 1 hour average up to 5 times per year, in which case they would be subject to a 3 hour average limit of 40 ppm.
2. Allow a 1 hour start up exemption, and a 15 minute shut down exemption from the 51 ppm NOx limit
3. Allow removal of the oxidation catalyst to make room for a 5th layer of SCR NOx reduction catalyst

The following applications were submitted for this project:

A/N	Unit
483417	15
483418	Title V Amendment

The Pebbly Beach facility is subject to RECLAIM and Title V. It is a major source of HAP emissions.

COMPLIANCE RECORD REVIEW:

The AQMD's Compliance database shows that for the last 5 years, in addition to the above violations for Unit #15, SCE has been subject to several other compliance issues, summarized as follows:

Notice #	Violation Date	Description
C71670	7/8/05	Provide documentation on Unit #7 original configuration
C98685	5/10/06	Report annual emission on APEP
C98696	7/13/07	Report NOx lbs/MW-hr for 2006
C98698	8/24/07	Report NOx lbs/MW-hr on quarterly basis from Q4 01 to Q4 03
D13865	12/2/08	Provide requested items for 2006 and 2007 audits
P45267	3/27/06	Unit #15 exceeded BACT limit on 3/27/06
P45277	12/31/06	Unit #10 exceeded annual NOx limit for 2006
P47997	1/1/07	NOx emissions exceed allocation for 2007

PROCESS DESCRIPTION:

Unit #15 is one of six diesel engines on site that are used to generate power for the island. Unit #15 is the newest and cleanest engine, it was installed on the island in 1995. Originally it was controlled with a technology called "NOxTech" (developed by Cummins Power Generation), which was a process that used cyuranic acid injected into the exhaust and heated to 1400° F in a reaction chamber. Once heated the acid reacts with the NOx to form N2, CO2, and water. In 2003, SCE removed the NOxTech system and instead installed a more conventional SCR system, although instead of ammonia, the reagent is urea, since storage of ammonia on the island was deemed by SCE to be unsafe.

The engine is manufactured by General Motors Corp., and is rated at 3,900 brake H.P. at 900 rpm, maximum rated output is 2.8 MW. It's a two-stroke engine with 16 cylinders, and is aftercooled and turbocharged. Fuel rate to the engine at maximum load is about 200 gallons per hour. Maximum exhaust flow rate at these conditions is about 12,500 DSCFM. The exhaust gas temperature is approximately 634° F at 100% load. Fuel is supplied by one of the two diesel fuel storage tanks on site.

SCE provided the following information on their engines:

Engine	Model	Cylinders	HP	Date of Manufacture
15	16-710G4B-EC	16	3900	1/1/1995

EMISSIONS:

Under SCE's proposal, NOx emissions will increase during a start up and shutdown, as compared to previous PTE calculations, since an exemption from the 51 ppm NOx limit during start ups and shut downs was not considered. Also, there is a potential increase in toxic emissions from the removal of the oxidation catalyst. PM10 and SOx are unaffected by the proposed modifications. CO and ROG are discussed below.

NOx:

SCE is asking for a 1 hour exemption during a start up, and a 15 minute exemption during a shutdown for Unit #15. SCE looked at over 80 start ups from January through March of 2007. From the data, the starts lasted from 15 to 44 minutes, with most of the starts lasting less than 30 minutes, but the NOx concentrations can peak at over 1000 ppm, with average NOx over the duration of the start at about 600-800 ppm.

Emissions of NOx will increase on an hourly, daily and annual basis due to the start up and shutdown exemptions.

ROG

Currently there is an 11 lbs/day limit on the equipment under condition A63.1. This emission limit was calculated based on an emission rate of 0.237 gr/bhp-hr provided by the manufacturer in the original permit application (A/N 296861), reduced by 77% for control by the NOxTech system (the original control technology for the engine). When SCE removed the NOxTech (A/N 405148), it was assumed that a similar reduction in ROG emissions would be achieved with the new SCR and oxidation catalyst. SCE then requested to remove the oxidation catalyst, first under A/N 438818, which was later denied, and now under this application. AQMD asked SCE to perform a stack test on the unit without the oxidation catalyst to determine the effect of the removal of the catalyst on the ROG emission rate. The test was performed on 10/24/07, the results (summarized in Appendix A), show ROG emissions of about 0.3 lbs/hr, or about 7.2 lbs/day.

CO

There is potentially an increase in CO emissions from the removal of the CO catalyst. The emission calculations for CO from Unit #15 going back to the original application (A/N 296861) did not account for any CO emission controls. However, when the SCR and CO catalyst were installed in 2002, a 50% reduction in CO was assumed under A/N 405148.

Hourly Emissions

Table E.1 Maximum Hourly Emissions Normal Operation

Pollutant	Uncontrolled Hourly Emissions	Controlled Hourly Emissions
NOx	63.7	4.6
CO	8.60	8.60
ROG	0.47	0.47
PM10	1.86	1.86
SOx	1.37	1.37
NH3	0.34	0.34

Table E.2 Maximum Hourly Emissions, Start Ups and Shutdowns

Pollutant	Hourly Start Up Emissions	Hourly Shutdown Emissions
NOx	27.8	5.1
CO	8.60	8.60
ROG	0.47	0.47
PM10	1.86	1.86
SOx	1.37	1.37

** these are the emissions that occur in an hour that includes a start or shutdown*

Daily Emissions

Table E.3 Maximum Daily Emissions

Pollutant	Uncontrolled Daily Emissions	Controlled Daily Emissions	Previous Controlled Daily Emissions	Increase/Decrease
NOx	1528.8	157.8	110.4	47.4
CO	206.1	206.1	206.1	0
ROG	11.2	11.2	11.2	0
PM10	44.4	44.4	44.4	0
SOx	32.9	32.9	32.9	0
NH3	8.2	8.2	8.2	0

For NOx, controlled daily emissions assume 2 starts and 2 shutdowns per day (1 hour each), with remaining 20 hours at full load operation. For all other pollutants, assume 24 hour full load operation. For previous NOx emissions, assume 4.6 lbs/hr for 24 hours (no start up or shut down provision)

Monthly Emissions

Table E.4 30 Day Average Emissions

Pollutant	Total Monthly Emissions	30-Day Average Emissions	Previous 30-Day Average Emissions	Increase/Decrease
NOx	4,844	161.5	114.1	47.4
CO	6,183	206.1	206.1	0
ROG	336	11.2	11.2	0
PM10	1332	44.4	44.4	0
SOx	987	32.9	32.9	0

For NOx, monthly emissions assume 60 starts and 60 shutdowns per month (1 hour each), with remaining 622 hours at full load operation. For all other pollutants, assume 24 hour full load operation for 30 days. For previous NOx emissions, assume 4.6 lbs/hr for 744 hours (no start up or shut down provision)

Annual Emissions

Table E.5 Annual Emissions

Pollutant	Annual Emissions		Previous Annual Emissions	Increase/Decrease
	Lbs/yr	Tons/yr	Tons/yr	Tons/yr
NOx	57,360	28.7	20.1	8.6
CO	75,227	37.6	37.6	0
ROG	4,088	2.0	2.0	0
PM10	16,206	8.1	8.1	0
SOx	12,009	6.0	6.0	0
NH3	2,978	1.5	1.5	0

For NOx annual emissions assume 720 starts and 720 shutdowns peryear (1 hour each), with remaining 7,320 hours at full load operation. For all other pollutants, assume 24 hour full load operation for 365 days.
For previous NOx emissions, assume 4.6 lbs/hr for 8760 hours (no start up or shut down provision)

Toxic Emissions

Toxic emissions from Unit #15 are summarized in Appendix D. SCE was asked to perform a health risk assessment (HRA) for the unit, assuming the removal of the oxidation catalyst caused an increase in diesel particulate matter (dpm) of 25%, based on current literature. DPM was deemed to be a carcinogen by California ARB in March 2008. This application was submitted in June of 2008, and is therefore subject to this recent ruling.

SCE performed a Tier 4 HRA for this application. The results are presented in Appendix C, and further discussed under the Rule 1401 analysis.

Pollutant	Annual Emissions
Acetaldehyde	2.66E+02
Acrolein	5.54E+01
Benzene	5.78E+02
Butadiene, 1,3-	9.48E+00
Ethyl benzene	1.41E+01
Formaldehyde	3.91E+03
PAHs	8.23E+01
Napthalene	2.77E+02
Toluene	1.94E+02
Xylenes	7.78E+01
Ammonia	2.978E+03

EVALUATION:

Rule 404 – Particulate Matter Concentration

This rule restricts the discharge of PM from the engine, with the limit being based on the exhaust flow. For Unit #15, typical maximum load exhaust flow is about 12,500 dscfm. At this exhaust flow rate, the Rule 404 limit is about 0.073 gr/scf. Unit #15 is expected to comply with this limit based on the following calculation:

(1.8 lbs/hr * 7000 gr/lb)/12,500*60 dscfh = 0.017 gr/scf

The latest SCE stack test on this unit showed a grain loading of 0.01 gr/scf. Compliance will be further verified by annual PM testing requirements.

Rule 1110.2 – Emissions from Gaseous and Liquid Fueled Engines

The engine is subject to NOx Reclaim and is therefore not subject to the NOx requirements of Rule 1110.2 per the Rule 2001 exemption for Reclaim sources. The engine is still subject to the VOC and CO limits in the rule. Currently the Table II limits are 250 ppm VOC and 2000 ppm CO. Beginning July 1, 2010, these limits will be reduced to 30 ppm VOC and 250 ppm CO. Because Unit 15 is also subject to a CO mass limit of 206.1 lbs/day, which is more stringent than the 2000 ppm limit of the rule, SCE is required to perform periodic emission checks with a portable analyzer. The emission checks are to be performed at least quarterly or every 2000 engine operating hours. Unit 15 is a lean burn engine, therefore it is not required to have a CO CEMS by paragraph (f)(1)(A)(vii). The facility is required to submit an Inspection and Maintenance Plan, which they have (A/N 486420). The engine is required to have an elapsed time meter by paragraph (f)(1)(B). Beginning August 1, 2008, CO and ROG stack testing is required at least once every 2 years or every 8,760 operating hours by paragraph (f)(1)(C), and the operator is required to maintain an operating log. Although the engine is lean burn with an SCR (using urea injection), it is not required under Rule 1110.2 to monitor the minimum inlet temperature for urea flow [paragraph (f)(1)(D)(i)(V)]because it is not subject to the NOx limit of the rule. Under Reclaim, however, the engine IS required to measure this parameter.

Regulation XIII – New Source Review

There is no increase in ROG, PM, or SOx as a result of this application. SCE has tested the unit for ROG emissions and shown that without the oxidation catalyst the emissions are still below the Condition A63.1 limit of 11 lbs/day. SCE has agreed to an annual limit on PM. They will also test the unit annually for ROG and PM and every 2 years or 8760 hours for CO to insure they are still complying with the daily limits of Condition A63.1. For CO emissions, although there may be an increase in actual emissions with the removal of the oxidation catalyst, the 206 lbs/day limit of A63.1 will not be exceeded. This limit is based on no CO control. The South Coast basin is in attainment for CO, therefore, there are no CO offsets required. Modeling for CO was not performed.

Rule 1401 – Toxic Air Contaminants

SCE has agreed to a 5.32 tons/yr limit on particulate matter, which is based on the emission levels expected with the oxidation catalyst. SCE will test the unit every year and use their hourly operating data to insure they are meeting the annual limit and the daily limit of 44 lbs/day.

Rule 1470 – Air Toxic Control Measure

Unit 15 is exempt from the PM limit of this rule because it uses an SCR [exempt by subparagraph (h)(14]. The requirements for using on CARB certified diesel fuel still apply. The unit is expected to comply.

Regulation XX – Monitoring, Reporting, and Recordkeeping for RECLAIM

The engine is a major source under Reclaim and is required to maintain a CEMS, including in-stack NO2 and O2 analyzers, a fuel meter, and a data handling and recording system. NOx emissions are to be reported daily. Other parameters to be measured are the ammonia flow rate, the exhaust temperature into the SCR catalyst, and the differential pressure across the catalyst bed. The unit is currently in compliance with the requirements of this rule.

Rule 2005 – NSR for NOx

There is an increase in NOx as a result of the BACT exemption during start up and shutdown. The calculated increase in 47.4 lbs/day, which assumes 2 starts and shutdowns per day.

BACT

The unit currently uses BACT in the form of and SCR, and is limited to 51 ppm NOx during normal operation, which is approximately 0.54 gr/bhp. This is considered BACT for this type of engine. The EPA's Tier 2 standard for this size engine is 4.8 gr/bhp for NOx+NMHC (approximate NOx+NMHC is 0.60 gr/bhp for Unit 15). There are no Tier 3 standards for this size engine, and Tier 4 standards don't take effect until 2011.

Modeling

SCE performed modeling for the start up and normal operation NOx emissions. Results are presented in Appendix C. AQMD planning staff reviewed the model and reported that based on the emissions rate used in the model (3.86 g/s, or about 30.6 lbs/hr) , the equipment may exceed the state AAQS of 339 ug/m3 during start up. SCE has agreed to a 25 lbs/hr start up limit so that the unit will not violate the state standard.

Offsets

SCE has sufficient RTCs to cover the anticipated annual increase in NOx of 8.6 tons/yr, which is based on the assumption of a 100% capacity factor.

Regulation XXX – Title V

The Pebbly Beach facility is currently subject to Title V, and the proposed changes to Unit 15 will be considered a de-minimis significant revision to the existing Title V permit. SCE has submitted a Title V revision application A/N 483418. As a de-minimis significant revision, the permit is subject to a 45 day EPA review and comment period.

40CFR 63 Subpart ZZZZ – NESHAPs for Engines

The Pebbly Beach facility is a major source of HAP emissions. Unit 15 is a stationary compression ignition (CI) engine, it is considered an existing engine because it is >500 hp and construction before 12/19/02. By subsection 63.660, an existing CI engine >500 hp is not subject to the emission limitations in Tables 1A or 1B, or the operating limitations in Table 2A or 2B.

RECOMMENDATION:

AQMD management and legal staff have made the determination that execution of the SA will allow SCE to operate Unit 15 in compliance with its modified permit and all rules and regulations of the AQMD.

Based on AQMD management's decision to implement the proposed Settlement Agreement, approval of this application is recommended, subject to the following conditions (proposed new conditions are shown in **bold underline**, conditions to be deleted are shown in ~~strikethrough~~, and all other conditions are existing and unchanged).

The proposed new conditions will reflect the language of the SA, in addition, it is recommended that there be an inclusion of a limit on the hourly mass emissions of NOx during a start up, and the total number of starts per year, as reflected in the modeling performed by SCE is support of this application. Also, SCE will be required to stack test ROG and PM emissions once every year to insure the emission rates of these pollutants remain within the limits on the permit.

CONDITIONS:

A. PROPOSED NEW CONDITIONS

The following conditions will be added to reflect the new 1 hour averaging time associated with the 51 ppm NOx limit, and the new start up and shutdown exemptions from this limit, and the modeling conducted for this application.

A63.2
The operator shall limit emissions from this equipment as follows:

Contaminant	Emission Limit
PM Emissions	Less than or equal to 5.32 tons/yr

The limit shall be verified by using the results from the latest source test for PM emissions and either the total annual fuel use or the total annual hours of operation for the unit. The yearly emission limit shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month. [Rule 1401]

A99.1
The 51 ppm NOx emission limit shall not apply during start up or shutdown periods. Each start up shall not exceed 60 minutes and each shutdown shall not exceed 15 minutes. There shall be no more than 720 start ups per year. NOx emissions for the 60 minutes which includes a start up shall not exceed 25 lbs.
[Rule 2005 – BACT]

A195.9
The 51 ppm NOx emission limit is averaged over 60 minutes at 15 percent O2, dry.

If the 51 ppm NOx limit is exceeded, Unit 15 shall be subject to a 40 ppm NOx limit averaged over any 3 hour block period which includes the one hour period during which the 51 ppm limit is exceeded, at 15 percent O2, dry, for no more than 5 times per calendar year.

The One-Hour Average NOx Limit is based on four consecutive valid 15 minute averaging periods. At least 1 minute of valid data is required for each 15 minute period.

The Three-Hour Average NOx Limit is based on twelve consecutive valid 15-minute averaging periods. At least 1 minute of valid data is required for each 15 minute period. If the daily calibration check occurs during any of the twelve periods (periods 1-12), that period may be excluded and a 13th 15-minute period may be added (period 0 or 13).

All other valid 15 minute average periods, including periods with data substitution, shall be used to calculate the averages.

Notwithstanding the clock-hour requirements of Rule 2012, or the definition of One Hour Average in this condition, the NOx emissions from the unit shall comply with the BACT limit for the 60 minute period beginning after the end of each start up, and for the 60 minute period beginning 15 minutes before the end of each shutdown. The operator shall also show compliance with the BACT limit for the overlapping clock-hour average in these situations.

The operator shall keep minute data for at least 60 minutes after the end of a start up and at least 60 minutes prior to the start of a shutdown, and use the average of the data to show compliance with the BACT limit. Any data substitution during these 60 minute periods shall be used in the calculation of the average.

[Rule 2005 – BACT]

D29.3

The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant to be Tested	Required Test Methods	Averaging Time	Test Location
ROG emissions	Approved District Method	1 hour	Outlet stack
PM emissions	District Method 5.2	1 hour	Outlet stack
CO emissions	District Method 100.1	1 hour	Outlet stack

The test shall be conducted at least once every year for PM and ROG, and at least once every 2 years for CO, or in accordance with Rule 1110.2, whichever is more stringent.

The test shall be conducted to determine compliance with the A63.1 limits. Test results in lbs/hr or lbs/1000 gallons shall be used in conjunction with either the hours of operation or the fuel use data to calculate the daily and annual emissions of these pollutants.

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, and the engine generating output in MW. The test shall be conducted when the unit is operating at 80% of full load or greater (less than full load test results will be prorated to full load). The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ROG and CO test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted in accordance with AQMD approved test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.
[RULE 1303(a)(1)-BACT, 5-10-1996]

B. EXISTING CONDITIONS

The following are the existing conditions on the engine, which will remain the same. Note that the testing required under condition D29.1 has already been performed for the unit, and no new testing is being required under this application. The condition will be removed when the final Permit to Operate is issued.

Facility Condition

F14.2
The operator shall not purchase fuel oil containing sulfur compounds in excess of 15 ppm by weight as supplied by the supplier.

This condition shall become effective on or after June 1, 2004.
[RULE 431.2, 9-15-2000]

Device Conditions

A63.1
The operator shall limit emissions from this equipment as follows:

Contaminant	Emission Limit
ROG	Less than or equal to 11.2 lbs/day
SOx	Less than or equal to 32.9 lbs/day
PM10	Less than or equal to 44.4 lbs/day

CO	Less than or equal to 206.1 lbs/day

The limits for ROG, CO, and PM10 shall be verified using the latest source test results for each pollutant in lbs/hr multiplied by the actual number of hours operated each day. [RULE 1303(b)(2)-Offset, 5-10-1996]

D29.1
The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant to be Tested	Required Test Methods	Averaging Time	Test Location
NOx emissions	District Method 100.1	1 hour	Outlet stack
CO emissions	District Method 100.1	1 hour	Outlet stack
SOx emissions	District Method 6.1	1 hour	Outlet stack
ROG emissions	Approved District Method	1 hour	Outlet stack
PM emissions	Approved District Method	District approved averaging time	Outlet stack
NH3 emissions	District Method 207.1 and 5.3 or EPA Method 17	1 hour	Outlet stack

The District shall be notified of the date and time of the test at least 10 days prior to the test

The test(s) shall be conducted after approval of the test protocol, but no later than 180 days after initial start- up of the internal combustion engine(s) with SCR

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the test shall measure the fuel flow rate (CFH), the flue gas flow rate, and the generator output (MW)

The test shall be conducted when the equipment is operating at loads of 100, 75, and 50 percent of maximum load

The test shall be conducted in accordance with a AQMD approved source test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the test date and shall be approved by the
AQMD before the test commences. The test protocol shall include the proposed operating conditions of the
ICE(s) during the test, the identity of the testing lab, a statement from the testing lab certifying that it meets
the criteria of R304, and a description of all sampling and analytical procedures.
[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 2005, 4-9-1999; RULE
2005, 4-20-2001]

D29.2
The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant to be Tested	Required Test Methods	Averaging Time	Test Location
NH3 emissions	District Method 207.1 and 5.3 or EPA Method 17	1 hour	Outlet stack

The test shall be conducted at least quarterly during the first 12 months of operation of the SCR, and at least annually thereafter.

The test shall be conducted to determine the NH3 emissions at the outlet using the specified method measured over a 60 minute averaging time period. The NOx concentration , as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District method 100.1.

The test shall be conducted when the equipment is operating at 80 percent load or greater.

The test shall be conducted and the results submitted to the District within 45 days after the test date.
[RULE 1303(a)(1)-BACT, 5-10-1996]

D323.2
The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on a quarterly basis, at least, unless the equipment did not operate during the entire quarterly period. The routine quarterly inspection shall be conducted while the equipment is in operation and during daylight hours.

If any visible emissions (not including condensed water vapor) are detected that last more than three minutes in any one hour, the operator shall verify and certify within 24 hours that the equipment causing the emission and any associated air pollution control equipment are operating normally according to their design and standard procedures and under the same conditions under which compliance was achieved in the past, and either:

1). Take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit; or

2). Have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures in the CARB manual "Visible Emission Evaluation", within three business days and report any deviations to AQMD.

The operator shall keep the records in accordance with the recordkeeping requirements in Section K of this permit and the following records:

1). Stack or emission point identification;

2). Description of any corrective actions taken to abate visible emissions;

3). Date and time visible emission was abated; and

4). All visible emission observation records by operator or a certified smoke reader.
[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

D425.1
The operator shall have the existing NOx CEMS monitoring this device reevaluated by the District by submitting a CEMS application. If the CEMS is not recertified within 90 days of the start-up of this device, the facility permit holder shall calculate and report NOx emissions in accordance with Rule 2012, Appendix A, Chapter 2, Paragraph (B)(17)-Recertification Requirements.
[RULE 2012, 3-16-2001; RULE 2012, 12-5-2003]

E51.1
The following condition number(s) shall not apply if all of the requirements stated below are met:

Condition number 63-1
Requirement number 1: startup, not to exceed 1 hour
[RULE 1303(b)(2)-Offset, 5-10-1996]

E71.2
The operator shall not operate this equipment if engine #11 is not shutdown, and the Permit to Operate
surrendered to the District.
[RULE 1303(b)(2)-Offset, 5-10-1996]

E73.1
Notwithstanding the requirements of Section E conditions, the operator may, at his discretion, choose not to use urea injection during start ups when the exhaust temperature at the inlet of the SCR reactor is less than 550 Deg F, not to exceed 1 hour:
[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 402, 5-7-1976]

H23.3 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
PM	District Rule	1470

These engines operating with SCR, are exempt from the PM standards of this rule [RULE 1470, 6-1-2007]

I331.1
The conditions and requirements for this device in Section H shall take effect, and shall supersede those in Section D, when the modifications authorized in Section H are completed. The operator shall notify the AQMD when the modifications are completed.
[RULE 202, 5-7-1976]

K40.2
The operator shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

Emission data shall be expressed in terms of mass rate (lbs/hr). In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include engine fuel , exhaust gas rate, and engine and generator output under which the test was conducted.

In addition, NOx emission data shall be expressed in terms of lbs/MW-hr

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 percent oxygen, dry basis.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 2005, 4-9-1999; RULE
2005, 4-20-2001]

Appendix A

Criteria Emissions

Original Emission Calculations

The original application for this equipment used manufacturer data for the calculation of NOx, ROG and CO, and AP-42 factors for PM10 and SOx, plus assumed control efficiencies for the NOxTech system for NOx, ROG, and PM10. The emission calculations can be referenced in A/N 296861, and are summarized as follows:

Emission Factors

Pollutant	Emission Factor, gr/bhp-hr	Source	NOxTech Control Efficiencies
NOx	6.19	Manufacturer	90%
ROG	0.237	Manufacturer	77%
CO	1.001	Manufacturer	0*
PM10	0.28	AP-42	23%
SOx	0.16	AP-42	0

** Although NOxTech controlled CO by about 50%, SCE did not claim the reduction efficiency, and it was not reflected in the A63.1 limits.*

Unit #15 Original Emission Calculations (A/N 296861)

Pollutant	Uncontrolled		Controlled	
	Lbs/hr	Lbs/day	Lbs/hr	Lbs/day
NOx	53.17	1274.6	5.32	127.5
CO	8.60	206.1	8.60	206.1
ROG	2.04	48.8	0.47	11.2
PM10	2.41	57.7	1.86	44.4
SOx	1.37	32.9	1.37	32.9

Modified Emission Calculations

When the unit was retrofit with an SCR, and the NOxTech removed, a different methodology was used to calculate emissions. NOx and CO were based on stack exhaust flow and concentration, ROG, PM10, and SOx were based on AQMD Form B-1 factors. The following data and calculations are taken from the previous set of applications (A/N 405148):

NOx and CO Data

Exhaust	Max Fuel	HP	MW	Uncontrolled	Uncontrolled

Flow, DSCFM	Use, gph			NOx, ppm @ 15%	CO, ppm @ 15%
10417*	92*	3900	2.8	470	256

Controlled NOx is based on assumed 90% control.

* Note that the 92 gph fuel use and the 10417 scfm exhaust flow figures are incorrect – the correct maximum fuel use is 200 gph, and the correct maximum exhaust flow is 12,500 dscfm.

ROG, PM10, and SOx are based on Form B-1 Factors as follows:

Pollutant	Factor, lbs/1000 gals
ROG	37.5
PM10	33.5
SOx	7.1

Unit #15 Emission Calculations Previous Application (A/N 405148)

Pollutant	Uncontrolled		Controlled		
	Lbs/hr	Lbs/day	Lbs/hr	Lbs/day	Annual
NOx	35.65	856	3.565	85.6	112426
CO	11.88	285	5.94	142.6	26840
ROG	3.45	82.7	3.45	82.7	18133
PM10	3.09	74.2	3.09	74.2	16241
SOx	0.654	15.7	0.654	15.7	3437

Assumes 24 hrs/day operation, 60% annual capacity factor

Sample calculations:

Uncontrolled NOx, lbs/hr:

(10417 cfm * 60 min/hr * 46 lbs/lb-mole * 470 ppm)/379E+6 cf/lb-mole = 35.65 lbs/hr

PM10, lbs/hr:

33.5 lbs/1000 gals * 92 gph = 3.08 lbs/hr

Conversion of SO2 to SO3 (considered a PM10):

Assume 1% of the SO2 is converted to SO3
One mole of SO3 reacts with 2 moles of NH3 to form one mole of ammonium sulfate $(NH_4)_2(SO_4)$
Molecular weight of SO2 = 64 lbs/lb-mole
Molecular weight of SO3 = 80 lbs/lb-mole
Molecular weight of $(NH_4)_2(SO_4)$ = 132 lbs/lb-mole

So, on a mass basis, every lb of SO2 will form 2 lbs of $(NH_4)_2(SO_4)$.
0.462 lbs/hr SO2 * 1% * 2 = 0.01 lbs/hr PM10
Total PM10 = 3.08 + 0.01 = 3.09 lbs/hr

New Emission Calculations

The following procedure will be used to calculate the NOx emissions from the unit for this application.

Normal Operation Data

Exhaust Flow, DSCFM	Max Fuel Use, gph	HP	MW	Uncontrolled NOx, ppm @ 15%	Controlled NOx, ppm @ 15%
12500	200	3900	2.8	700	51

1. Normal NOx

Under fully controlled conditions, hourly NOx emissions can be estimated as follows:

NOx concentration = 51 ppm
Exhaust flow = 12,500 scfm

$$NOx_{con} = \frac{(12{,}500 \text{ scfm} * 60 \text{ min/hr}) * 51 \text{ppm} * 46 \text{ lbs/lb-mole}}{379E+6 \text{ ft}^3\text{/lb-mole}}$$

NOx_{con} = 4.6 lbs/hr

Similarly, using a concentration of 700 ppm, the uncontrolled NOx can be calculated at:

NOx_{un} = 63.7 lbs/hr.

2. Start Up NOx

Start Up Operation Data

	Exhaust Flow	NOx Concentration
1st 30 minutes	10,000	700 ppm
Last 30 minutes	12,500	51 ppm

Mass emission rate of NOx during a start up hour can be estimated as follows:

Assume the uncontrolled portion of the start up hour lasts 30 minutes, after which the exhaust temperature reaches the SCR operating temperature, and the remaining 30 minutes of the hour is fully controlled by the SCR to 51 ppm.

Average uncontrolled NOx concentration = 700 ppm
Average controlled NOx concentration = 51 ppm
Average exhaust flow 1st 30 minutes = 10,000 scfm
Average exhaust flow last 30 minutes = 12,500 scfm

$$NOx = \frac{[(10{,}000*30)*700 + (12{,}500*30)*51]*46 \text{ lbs/lb-mole}}{379E+6}$$

NOx = 27.8 lbs

3. Shutdown NOx

Shutdown Operation Data

	Exhaust Flow	NOx Concentration
1st 45 minutes	12,500	51 ppm
Last 15 minutes	10,000	90 ppm

Although the exemption from the 51 ppm for a shutdown will only be for 15 minutes, the NOx emissions for the hour that includes a shutdown can be estimated by assuming the unit operates at full load under normal conditions for the first 45 minutes, then the concentration increases to 90 ppm during the shutdown when the SCR is no longer operating. A 10,000 scfm exhaust flow is assumed for the last 15 minutes.

$$NOx = \frac{[(10{,}000*15)*90 + (12{,}500*45)*51]*46 \text{ lbs/lb-mole}}{379E+6}$$

NOx = 5.1 lbs

Daily NOx emissions:

Assumes 2 start ups and 2 shutdowns per day, the remaining time at full load operation

Operational Status	Time, hours	Emissions, lbs/hr	Emissions, lbs
Start Up	2	27.8	55.6
Normal Full Load	20	4.6	92
Shutdown	2	5.1	10.2

Total	24 hours	////////	157.8

Monthly NOx Emissions

Assumes 60 starts and shutdowns per month, 30 days

Operational Status	Time, hours	Emissions, lbs/hr	Total, lbs
Start Up	62	27.8	1,668
Normal Full Load	622	4.6	2,870
Shutdown	62	5.1	306
Total	744 hours	////////	4,844
		30 Day Average	161.5

Annual NOx Emissions

Assumes 720 starts and shutdowns per year

Operational Status	Time, hours	Emissions, lbs/hr	Total, lbs
Start Up	720	27.8	20,016
Normal Full Load	7320	4.6	33,672
Shutdown	720	5.1	3,672
Total	8760 hours	//////////	57,360
		Total, tons	28.7

SCE stack tested the unit on March 18, 2004 for NOx, CO, ROG, PM10, and SOx. SCE tested the unit after installation of the SCR, and the following are the results of the testing:

Results of 3/18/04 Test With SCR & Oxidation Catalyst

Pollutant	Test Results	
	100% Load	75% Load
NOx	29.4 ppm @ 15%	22.8 ppm @ 15%
CO	11.7 ppm @ 15%	0.9 ppm @ 15%
ROG	2.1 ppm @ 15%	2.2 ppm @ 15%
PM10	0.01 gr/scf	////////
SOx	1.3 ppm @ 15 %	1.5 ppm @ 15%

A subsequent test was performed on October 24, 2007 at the request of AQMD to determine the ROG emissions after removal of the oxidation catalyst. This test was performed WITHOUT the oxidation catalyst, and the results were as follows:

Results of 10/24/07 Test With SCR, Without Oxidation Catalyst

Pollutant	Ppm @ 15%	Lbs/hr
ROG	14.0	0.30

Stack flow rate = 8,352 dscfm

A test of the CO was NOT requested because SCE never claimed any control of CO from either the NOxTech or the oxidation catalyst, so the emission offsets for CO were always based on an uncontrolled emission rate of 206.1 lbs/day.

At 12,500 dscfm exhaust flow for 100% load, the calculated mass emission rates from the test results are as follows:

Estimated Mass Emissions from Source Test Results

Pollutant	Emissions	
	Lbs/hr	Lbs/day
CO	0.648	15.6
ROG	0.3	7.2
PM10	1.07	25.7
SOx	0.165	4.0

The measured concentrations and calculated mass emissions rates support the controlled emission calculations from the original application (ie the test results are lower, so the calculations do not underestimate the emissions), even without the NOxTech (and without the oxidation catalyst for ROG). The emission calculations from the previous application show emissions that for CO, ROG, and PM10 are higher than the A63.1 limits, and are based on default emission factors. Therefore, the controlled emission rates from A/N 296861 will be used for CO, ROG, PM10, and SOx, for both controlled and uncontrolled emissions.

Unit #15 New Emission Calculations, Non-Reclaim Pollutants

Pollutant	Uncontrolled		Controlled	
	Lbs/hr	Lbs/day	Lbs/hr	Lbs/day
CO	8.60	206.1	8.60	206.1
ROG	0.47	11.2	0.47	11.2
PM10	1.86	44.4	1.86	44.4
SOx	1.37	32.9	1.37	32.9

Appendix B

Summary of Start Up Data, 2007

Start No.	Date	Start Time	Start End Time	Duration of Start min	Peak NOx Conc. ppm	Average NOx Conc. ppm	Remarks and Startup emissions in pounds
1	Jan 3	0751	0819	28	1033	739	29.99
2	Jan 5	1543	-	-	1070	-	Startup operation was aborted.
3	Jan 5	1656	1740	44	978	279	21.23
4	Jan 5	1824	-	-	1040	-	Startup operation was aborted.
5	Jan 8	1336	-	-	-	-	Startup operation was aborted.
6	Jan 8	1641	-	-	-	-	Startup operation was aborted.
7	Jan 9	0746	0827	41	1066	625	26.22
8	Jan 10	0824	0836	12	897	690	13.28
9	Jan 11	0742	0759	17	917	699	17.29
10	Jan 12	0816	0916	-	1044	-	Startup operation was aborted.
11	Jan 13	0940	0959	19	968	668	19.07
12	Jan 14	0651	0714	23	989	838	Not a good start. Process down and under calibration.
13	Jan 15	0652	-	-	-	-	Unit was in calibration. Not a good start.
14	Jan 16	0647	-	-	-	-	In the beginning unit was in calibration. Not a good startup.
15	Jan 17	14:58	15:14	16	1043	621	Pound emission data not available-
16	Jan 18	10:49	11:06	17	1009	512	-
17	Jan 19	10:00	10:18	18	1083	581	Not a good start. Fluctuating NOx concentrations.
18	Jan 20	0724	0740	16	973	781	15.39
19	Jan 21	0759	0814	15	925	717	14.23
20	Jan 22	0658	0714	16	1059	558	15.90
21	Jan 23	0842	0858	16	1033	792	15.90
22	Jan 24	0707	0719	12	891	656	14.36
23	Jan 25	0727	0739	12	1053	704	15.63
24	Jan 26	0723	0739	16	864	639	13.88
25	Jan 27	1603	1619	16	953	690	17.17
26	Jan 29	0103	0115	12	668	500	7.85
27	Jan 31	0704	0719	15	826	623	15.34
28	Feb 1	0702	0714	12	856	720	12.66

Start No.	Date	Start Time	Start End Time	Duration of Start min	Peak NOx Conc. ppm	Average NOx Conc. ppm	Remarks and Startup emissions in pounds
29	Feb 2	0802	0813	11	829	650	11.07
30	Feb 3	0720	0732	12	848	620	11.24
31	Feb 4	0917	0929	12	849	572	11.38
32	Feb 5	0746	0800	14	773	601	11.33
33	Feb 7	0757	0814	17	865	689	17.36
34	Feb 8	0654	0707	13	959	653	Process down and calibration. Not a good start.
35	Feb 10	0837	0900	23	914	808	23.38
36	Feb 12	0853	0907	14	1016	772	15.30
37	Feb 13	0708	0720	12	1016	829	16.23
38	Feb 14	0700	0713	13	1118	740	Not a good start, calibration.
39	Feb 14	1109	1122	13	1066	829	16.46
40	Feb 15	1153	1211	18	1141	770	23.07
41	Feb 16	0616	-	-	-	-	Calibration process in progress.
42	Feb 17	1242	-	-	-	-	Invalid data.
43	Feb 18	1037	1100	23	928	785	20.55
44	Feb 19	0751	0812	21	913	806	20.66
45	Feb 20	0802	0824	22	965	538	18.47
46	Feb 21	0722	0737	15	981	703	18.20
47	Feb 22	0749	0806	17	936	747	16.70
48	Feb 23	1226	1243	17	1012	740	21.07
49	Feb 24	0734	0751	17	1030	718	20.52
50	Feb 25	0719	0740	21	1004	522	21.06
51	Feb 26	0659	0719	20	916	720	17.89
52	Feb 27	0700	0720	20	990	724	19.15
53	Feb 28	0648	-	-	-	-	Not a good start. Calibration was in progress.
54	Mar 1	0632	-	-	-	-	Not a good start. Calibration was in progress.
55	Mar 2	1423	1458	35	1100	354	21.65
56	Mar 2	1635	1645	10	1127	743	12.02
57	Mar 3	0927	0943	16	1043	708	16.40
58	Mar 4	0817	0829	12	1004	739	Not a good start. 14.52
59	Mar 4	1255	1309	14	1210	495	14.10
60	Mar 5	0733	0744	11	918	330	13.48
61	Mar 6	0832	0842	10	1010	504	10.99
62	Mar 7	1124	1141	17	987	687	19.02
63	Mar 8	1208	1223	15	986	774	16.46
64	Mar 9	0726	0741	15	1013	830	16.63
65	Mar 10	0749	0802	13	943	788	15.53
66	Mar	0753	0807	14	959	730	16.16

Start No.	Date	Start Time	Start End Time	Duration of Start min	Peak NOx Conc. ppm	Average NOx Conc. ppm	Remarks and Startup emissions in pounds
	11						
67	Mar 12	0734	0748	14	1033	690	14.41
68	Mar 14	1644	1700	16	1094	783	20.46
69	Mar 15	1309	1325	16	897	689	18.44
70	Mar 16	1728	1812	44	988	876	61.95
71	Mar 17	1455	1521	26	829	681	22.02
72	Mar 19	1233	1248	15	954	796	20.07
73	Mar 19	1521	1530	9	880	-	Problem with data set.
74	Mar 20	0222	0233	11	932	707	11.08
75	Mar 21	0624	0642	18	923	701	16.89
76	Mar 23	1414	1431	17	1032	806	20.96
77	Mar 24	0729	0742	13	923	753	15.27
78	Mar 25	1031	1048	17	959	684	15.72
79	Mar 27	0840	0903	23	886	691	20.62
80	Mar 29	1759	1813	14	991	550	18.71
81	Mar 30	0931	0947	16	869	690	15.52

Appendix C.

Modeling

Modeling was performed for the start up and shutdown NOx emissions, and for the cancer risk increase from removal of the oxidation catalyst.

SCE used AERMOD (version 07026) for the NOx and toxic air dispersion modeling and the cancer risks were calculated using the OEHHA cancer risk equations. Met data from the Avalon Airport was used and modified in an attempt to fit the Pebbly Beach site (the airport is in elevated terrain and the site is on coastal terrain). Monitoring data from the Northwest Coastal LA County (station 091) for years 2004-2006 was used to determine the background concentrations.

The inputs and results for the NOx modeling are summarized below:

Stack Parameters and Emission Rates, Normal Operation

Parameter	Unit 15
Stack Dia, m	0.80
Stack Ht, m	7.32
Stack Temp, deg K	616.48*
Stack Velocity, m/s	20.87*
NO2, 1 hour, g/s	0.488
NO2, Annual, g/s	0.85

** these parameters were later corrected to 25.91 m/s and 606 K*

Stack Parameters and Emission Rates, Start Up Operation

Parameter	1/3/07	1/9/07
Stack Dia, m	0.80	0.80
Stack Ht, m	7.32	7.32
Stack Temp, deg K	552.59	494.26
Stack Velocity, m/s	15.17	10.66
NO2 Emissions, g/s	3.86	3.41

Stack Parameters and Emission Rates, Shutdown Operation

Parameter	Unit 15
Stack Dia, m	0.80
Stack Ht, m	7.32
Stack Temp, deg K	616.48
Stack Velocity, m/s	10.82
NO2 Emissions, g/s	0.73

Model Results, NOx

Scenario	Averaging Time	Maximum Predicted Impact	Background Concentration	Total Concentration

		(ug/m3)	(ug/m3)	(ug/m3)
Startup, January 3, 2007	1 hour	264.9	161.7	426.6
Startup, January 9, 2007	1 hour	282.9	161.7	444.6
Normal	1 hour	113.3	161.7	275.0
Shutdown	1 hour	142.1	161.7	303.8
Normal Operation	Annual	10.1	37.2	47.3

For the toxics analysis, the following parameters were used, with the results as summarized below:

Stack Parameters and Emission Rates, Toxic Analysis

Parameter	Unit 15
Stack Dia, m	0.80
Stack Ht, m	10.0
Stack Temp, deg K	606
Stack Velocity, m/s	25.91
DPM g/s	0.0333

Model Results, Toxics

Year	MICR, Residential	MICR, Off-Site Worker	Chronic Hazard Index
2004	4.6	5.2	0.02
2005	4.2	5.3	0.02
2006	3.4	6.2	0.02

Appendix D

Toxic Emissions

The estimated toxic emissions from Unit 15 are based on factors from CARB's database, CATEF. Maximum hourly emissions are based on fuel use rate of 200 gph. Maximum annual PTE emissions are based on 8760 hours per year operation at full load.

Pollutant	Emission Factor	Hourly Emissions	Annual Emissions
	Lbs/mgal	Lbs/hr	Lbs/yr
Acetaldehyde	1.52E-01	3.04E-02	2.66E+02
Acrolein	3.16E-02	6.32E-03	5.54E+01
Benzene	3.30E-01	6.60E-02	5.78E+02
Butadiene, 1,3-	5.41E-03	1.08E-03	9.48E+00
Ethyl benzene	8.03E-03	1.61E-03	1.41E+01
Formaldehyde	2.23E+00	4.46E-01	3.91E+03
PAHs	4.70E-02	9.40E-03	8.23E+01
Napthalene	1.58E-01	3.16E-02	2.77E+02
Toluene	1.11E-01	2.22E-02	1.94E+02
Xylenes	4.44E-02	8.88E-03	7.78E+01
		Total, lbs/yr	5,462
		Total, tpy	2.73

On March 7, 2008, CARB declared exhaust from diesel engines as a carcinogen. This application which was submitted in June of 2008, is subject to that new ruling. Therefore, for purposes of determining the health risk associated with the toxic emissions from Unit 15, the rate of diesel particulate matter (dpm) emissions is used in the analysis. The health risk factors associated with dpm take into account the risks associated with all the above pollutants. SCE used a DPM emission rate of 1.321 lbs/hr for the analysis.

Ammonia

Ammonia emissions are calculated using the permitted limit of 10 ppm and the maximum exhaust flow of 12,500 dscfm.

$$\text{NH3, lbs/hr} = \frac{(12{,}500*60) \text{ X } 17 \text{ lbs/lb-mole X } 10 \text{ ppm}}{379\text{E+}06 \text{ ft3/lb-mole}}$$

NH3 = 0.34 lbs/hr
= 2,947 lbs/yr

Appendix E

Calculation of Start Up Limit and Annual PM Limit

Start Up Limit

SCE modeled 2 start ups for this application – one on January 3, 2007, and one on January 9, 2007. The 1/9/07 start resulted in the higher modeled impact - 438.6 ug/m3 (see 3/20/09 memo from Naveen Berry). This is higher than the State standard of 339 ug/m3. The modeled emissions for this start were 3.41 g/s. Therefore, taking the ratio of the allowable impact to the modeled impact (339/438.6) and applying it to the modeled emissions results in an allowable emission rate of 2.64 g/s, which equates to 21 lbs/hr. The limit of 25 lbs/hr allows for some operational flexibility.

Annual PM Limit

SCE performed a Health Risk Assessment (HRA) for this application, the results showed potential for greater than 10 in a million cancer risk for an offsite worker (at a currently unoccupied site), and greater than 1 in a million for residential receptors (see 3/20/09 memo from Naveen Berry). To perform the HRA, the facility assumed an increase in diesel particulate matter (DPM) of 25% over the most recent source test results of 1.057 lbs/hr with the oxidation catalyst. Therefore, without the oxidation catalyst, the new PM emission rate was assumed to be 1.321 lbs/hr (only the increase in PM of 0.264 lbs/hr was modeled). In order to limit the unit to no increase in toxic emissions, a permit condition is proposed to limit PM to the actual average emissions (with the oxidation catalyst), calculated as follows

PM emission rate = 1.057 lbs/hr
(from April 2004 test result of 0.01 gr/dscf at 100% load, 12,328 dscfm exhaust flow)

At 8,760 hours/yr operation, this is 9,259.3 lbs/yr. An adjustment factor of 15% is recommended to account for the variability in testing, resulting in 10,648.2 lbs/yr, or 5.32 tons/yr.

Appendix F

Application Data and Fees

A/N	Submittal Date	Equip	Bcat	Fee Sch	Fee
483417	6/3/08	Unit #15	040202/81	C	1,758.90
483418	6/3/08	Title V	555009	C	1,687.63
		Expedited Permit Processing			879.45
				Total	4,325.98